No. 1798 OF 1905-1906.

SIND FOREST OFFICE,
Karachi, 24*th July* 1905.

From

T. R. BELL, ESQUIRE,
Deputy Conservator of Forests,
in charge Sind Circle,

To

THE SECRETARY TO GOVERNMENT,
Revenue Department,
Bombay.

SIR,

I have the honour to submit the Working Plans Report for the Sukkur division, compiled by Mr. A. C. Robinson, Extra Assistant Conservator of Forests, for the orders of Government, after scrutiny by the Senior Conservator and Superintendent, Working Plans.

2. This working plan for the Sukkur division completes the organisation of the forests of Sind and was compiled during the years 1900-1901 to 1902-1903; the reason for the length of time taken being as explained in the introduction to the report. It was first submitted to this office on the 28th Novem[illegible] 1903. It was sent to the Divisional Forest Officer, Sukkur, for any remarks he might have to offer, and the Divisional Forest officer kept it for over a year for the reason that several forests omitted by Mr. Robinson from the prescriptions of the working plan were considered by me, after inspection, to be ready for exploitation. Owing to bad health and the want of a competent surveyor, the final submission of the plan to this office was delayed until March of this year.

3. As the plan is on the same lines as those already sanctioned by Government for Hyderabad, Naushahro and Jerruck, and the forests of the latter two divisions having been organised by the same officer, Mr. Robinson, its provisions have been applied to the forests concerned since the season 1901-1902 by order of the Deputy Conservator of Forests.

4. The area dealt with under the plan as now submitted includes all the forests of the Sukkur division, amounting to Rs. 2,69,267+3,940+398= 2,73,605 acres, all land reserved under section 19 of the Indian Forest Act. The cost, Rs. 22-5-6 per acre, incurred compares very favourably with that of the plans prepared for the other divisions, *viz.*, Hyderabad Rs. 37-13-0, Naushahro Rs. 18-11-0 and Jerruck Rs. 27-15-1 per acre.

5. In paragraph 18, it is stated that the forests between Jacobabad and Shikarpur are not worthy of the name. With this I do not agree as the forests are very fairly good, and portions that receive slight water are as good as many situated by the side of the Indus. The soil is very good and with irrigation the forests would take their place with some of the best in the division.

6. Paragraph 21.—The people of the division who are still able to get their firewood from revenue waste lands will, within the next 20 years, be absolutely dependent upon forests for their fuel-supply. At present these revenue wastes have still a thin covering of trees—hacked and pollarded without exception—and small bushes: remnants of fine forest growth which existed at the time of the annual floods which watered the country before bands and other irrigation works were instituted. This growth is now rapidly dying off, helped by the hacking and ill usage going on unchecked by goat-herds, graziers and villagers.

7. Paragraph 24.—The riverain sheets only give the forests in the immediate neighbourhood of the river and the compilation of complete maps of ranges and the division was a very lengthy business. There has never been a forest survey in Sind and even at the present date there is still much left to be desired in the maps of the department.

8. Paragraph 26.—All the forests are now demarcated both inside and outside by mounds surrounded by a shallow ditch with short trenches showing the direction of the boundaries. Compartment lines still remain to be cut in the four Jacobabad forests of Milkiat Sarcar, Abad, Mahrabpur and Dilawarpur, as well as in part of Keti Shah. The practice of cutting compartment lines, wide enough to act as a protection against fire, is being introduced in the forests where the grass is high and dense enough to require it. The cutting of wide lines through forests overgrown with *sar* and *kanh* grass which constitute the chief danger, is very laborious and therefore costly; which constitutes the chief reason for the lines being narrow.

9. Paragraph 32.—The legal position of *kachas* remains still the same, *e. g.*, they are not legally forest either reserved or protected although to all intents and purposes treated as forest. As they are formed they are always handed over to the Forest department by the revenue authorities. They constitute integral parts of reserved forest and yet are not legally such; they possess growth on them in some cases which is continually being damaged by people; and nothing can be done to prevent it, as the courts cannot take any steps under the Forest Act. All forests in Sind being reserved, the *kachas* awarded from time to time should be considered to become reserved forest from the date of their being handed over to the Forest department. In all cases where they are new lands, there can be no question of any rights existing therein. The Forest Act would have to be amended for the purpose. Under [illegible]rs of the Commissioner a full enquiry into claims is made prior to handing [illegible]er to the Forest department.

10. Paragraph 35.—With regard to the remarks about babul, I think that the trees will increase in number under the present practice of broadcasting the coupes in the irrigated forests with seed; during my inspections I noticed several cases where there was promising reproduction. The tree is affected more than any of the other three species by frost which handicaps it to a certain extent in Upper Sind. In past years much attention has not been paid to the Sukkur forests in the matter of reproduction and this accounts for the paucity of babul trees; also, the riverside forests are peculiarly unstable in the division and those away from the river do not receive sufficient water for the growth of the tree.

11. Paragraph 36.—Mr. Robinson states that *bahan* is not more plentiful in Sukkur than it is in Naushahro and Hyderabad. This is not quite accurate. There is no doubt that the tree is more plentiful in Upper Sind than elsewhere, though as regards "natural habitat" it grows as well in the forests of the other two divisions as it does in Sukkur, but is scarcer, I fancy, owing to the larger number of babul trees in the former.

12. Paragraph 39.—All that the organiser says in this paragraph is only too true and shows the necessity of preserving the river frontages of the forests, if these are to be kept as such. It is sometimes difficult to maintain a frontage intact as the claims of zamindars, who also loose land by erosion, have to be considered, and these men now and again succeed in getting land which is absolutely necessary to a forest.

13. Paragraph 41.—The question of irrigating the forests deprived of the flood water that originally reached them is one of great interest, as the value of the property concerned has suffered greatly since the construction of the Public Works department bunds and canals. The forests on the west side of the river, those of the Kot Sultan, etc., suffer most being at present entirely cut off from any recognised water supply: the canals from which irrigation would be possible being declared insufficient in carrying capacity for anything outside cultivation purposes. These western forests get a precarious supply from zamindari canals and kasis when the proprietors are obliging

enough to give it; yet they are extremely important constituting as they do the only centres of the fuel supply of Jacobabad and Shikarpur. It will not be long before they will have to supply the whole country, villages, etc., as the former covering of bushes, etc., remnants of the flood days, is fast disappearing. The erection of bunds just alluded to has deprived 92,000 out of the total 2,70,000 acres of water and rendered them nearly unproductive. Arrangements are being discussed in connection with new canal projects for the irrigation of the following areas under forest :—

On the left bank.	
Acres.	
75,483	... Ghotki canal.
6,937	... Mahi wah.
7,536	... Korai wah.
6,057	... Sehar wah.
Right bank.	
Acres.	
2,058	... Channel *ex* Begari canal.

From the correspondence that took place recently between the Forest department and the Public Works department with regard to the Ghotki canal scheme it seems that there was some question of disforesting all the forest land concerned, *i.e.*, the above 75,483 acres, for the reason that the revenue derivable from it at present as well as in the future would not be as high as that which the land would yield under cultivation. The present area of forest in the division is small enough as it is (2 per cent. of the total area, 7 per cent. of the cultivable area) and will be found insufficient in the near future when the always increasing population, cattle and mills will have to depend thereon for all their supplies in fuel, etc., owing to the absolute extinction of all woody growth on the Government waste lands deprived of all flood water for years past. The areas under forest in the Ghotki canal scheme do now to some extent get watered by flood water, but this will cease when the canal becomes an established fact.

14. Paragraph 42.—I do not agree with Mr. Robinson that any of the forest areas should be given up as long as they can be watered even at some pecuniary sacrifice. The area under forest is already too small from an economic point of view—miserably so from the point of view of the forester, *i. e.*, climatic. It has been found in Europe by actual experience that a forest of 25,000 acres means a cooling of the atmosphere by 16 per cent.; and I noticed, even in the deteriorated forests of Sukkur during the month of May last year, the great difference that existed between forests and their immediate vicinity and the open country. This climatic consideration in an *inferno* like Upper Sind in the hot weather, should surely have some effect upon the question of disforestment of the existing tree-covered lands. I do not think that there is much chance of getting lands on the river to replace any disforested inland areas, even were the disforestment advisable, as all that is not under forest already along the river is private property of the zamindars. As to the question of flood ways in bunds, the Public Works department is now quite liberal, and the chief difficulties we experience altogether concern connection through private lands with the water sources.

The selecting of new lands for forest in pursuance of the Commissioner's letter No. 957 of the 2nd May 1903 has been going on and will shortly be finished. The termination of the contract with the North-Western Railway, however, meaning as it does temporary falling off in the demand for fuel, is likely to influence the revenue authorities in their willingness to acquiesce in the forest area being added to; and the projected canals, promising great irrigational facilities for cultivation extension, form another adverse factor with which the Forest department has to contend. Extensive cultivation meaning immediate returns in revenue, only too naturally carries the day as against forests which will only yield their produce after 30 years or more.

15. Paragraph 43.—It is hoped that the orders which have been issued to cut the rides, through the portions of forests where the grass is high and dense,

of greater width will prevent much of the damage that has taken place in the past from fires by stopping them from spreading.

16. Paragraph 44.—Perhaps some of Mr. Robinson's remarks in this paragraph are to some extent true, although somewhat severe. That gaps are made in hedges is true enough but I do not think, except in a few cases, that it is with the cognizance of the guards. He does not seem to recognise the great difficulty of getting rid of 'gormal;' to catch them is a most laborious undertaking, and we are not allowed to deal otherwise with them; proof of ownership is impossible to come by. His contention that areas closed to browzers are used as a means of making money by the subordinative staff I do not believe, for, although it is difficult to keep occasional camels and goats out of coupes open to grazing, my experience goes to prove that the browzing is very limited in such areas. It is very true that there is a good deal of damage done by goat-herds—generally nomadic Baluchis in the northern and western forests—but I am satisfied that the great majority of cases are reported and prosecuted or compounded. Protection is most difficult in a lot of small detached forests such as many of these are, surrounded on all sides by cultivation and waste lands, very often including strips and pieces of cultivation where goat-herds and cattle-owners are allowed to erect their huts at any time.

17. Paragraph 51.—The contract with the North-Western Railway will cease in September of this present year as agreed upon between the Railway and the Forest department, and sanctioned by the Commissioner in Sind in his No. 1527 of the 23rd May 1905.

18. Paragraph 52.—The *tali* plantations are progressing very favourably, are being extended year by year, and promise to be an extremely lucrative investment in the future.

19. Paragraph 53.—I am not in favour of abandoning the Rahuja nursery as it is advisable to have such an institution in each division for conducting experiments that may be necessary. The nursery, being the only place near Sukkur where there are any trees accessible to the officers and respectable residents, is used by them as a favourite place of resort within easy driving distance from the town.

20. Paragraphs 54 and 55.—The sowing of babul seeds where only *kandi* can succeed, was due to want of supervision on the part of the Divisional Forest Officer, and it is hoped has now finally ceased. The plantation in the Kot Sultan forest have not been all failures although, from the same want of interest on the part of successive Divisional Forest Officers, the area successfully planted is not nearly as large as it should have been. It has not been realised that these cultivations are really plantations, and as such require constant supervision during the first three or four years of growth. I consider the state of Kot Sultan forest not at all unsatisfactory. Without water, we have to do what we can to get a growth at present and must look forward to the time when canal water will be available for satisfactory irrigation. The portion of the Kot Sultan forest where babul was grown used to get sufficient water from a small canal, the property of the Forest department. A zamindar was allowed, by some incomprehensible mistake, to excavate a channel for his lands out of this forest canal under a contract to give any surplus water to the forest. There never is any surplus water and so the babul has all died. I agree with the remarks made in the latter part of paragraph 54. Great progress has been made in the improvement of the irrigation of the forests in Sukkur as well as in other divisions by means of small works carried out by the Forest department during the last three or four years, and the work is being energetically continued.

21. Paragraph 56.—The average revenue from the Sukkur forests for the last five years ending 1904-05 is Rs. 1,04,713, the expenditure being Rs. 32,762, giving an average surplus of Rs. 71,951.

22. Paragraph 57.—The most important product from these forests will always be firewood, as *kandi*, the chief species, is only useful for burning.

Bahan might, in the future, become of importance for the manufacture of pulp for paper as it will probably be found valuable for that purpose. It is more than probable that the future will see a large demand from Quetta and Baluchistan for fuel from Sukkur. Even now a wood famine is anticipated in Quetta and correspondence is going on between this office and the Baluchistan Forest office on the subject.

23. Paragraph 59.—The compartment lines in the forests only make very indifferent roads, successions of hills and hollows, and it is considered advisable to gradually convert two lines running at right angles to each other in each forest into good roads as opportunity offers, to facilitate export. It is probable that fuel could be floated down the Indus in the form of rafts. The boat hire is extremely high and largely accounts for the small price paid for wood in Sind: Rs. 12 for 1,000 c. ft., which, in Kanara and parts of the Presidency, sells for at least Rs. 20 or Rs. 30 according to position of forest, and even sometimes reaches Rs. 50 and Rs. 60.

24. Paragraph 60.—The ghat system for wood on permit has been stopped since 1903 and the people are now obliged to take their wood from the current year's coupes through the contractors who issues passes checked at the ghats. Ghats cannot be done away with as they are necessary for checking purposes.

25. Paragraph 64.—The Divisional Forest Officer informs me that the average rate for boating wood to Sukkur is Rs. 12 and not Rs. 5 as stated by Mr. Robinson.

26. Paragraphs 66 and 67.—The seignorage prices charged for the different kinds of produce will be found in appendix O.

This may be considered to be the net price of such produce. Most of the forests in Sukkur yield, very fairly constantly, 500 c. ft. of loco. fuel, but there is some small fuel and a certain amount of timber besides which the contractors dispose of locally.

27. With reference to the staff it is certainly advisable to make two divisions of the present Sukkur division as this latter is too extensive, considering its area and the difficulty of getting about, for one man to effectively control; the area of the forests alone being 273,000 as compared with 117,000, 144,000 and 129,000 for Naushahro, Hyderabad and Jerruck, respectively. There is so much to do in the way of plantation work, irrigation schemes, and general supervision, that one individual cannot successfully cope with it, and this fact accounts to some extent for the backward state of the forests.

28. Paragraph 72.—There is much to be said for, as well as against, free labour. The maldars work willingly for the purpose of irrigation and consequent augmentation of the grazing areas. I do not believe that the fall in grazing revenue is due to corrupt practices. The chief reason for the decrease is to be found in the deterioration of the forests in consequence of defective irrigation. It is very probable that malpractices do exist, but they are not as common as formerly.

29. Paragraphs 75 to 78.—The divisions into working circles and compartments are identical with those adopted in the three other plans approved by Government. The yield per acre of 500 c. ft. is very small when compared with that of the babul forests of Hyderabad where it is 1,500 on an average, and is due, firstly, to want of irrigation as Mr. Robinson states, and, secondly, to the fact that *kandi* is a species which grows much more sparsely than babul, *i. e.*, does not form dense forests like the latter. More than half the forests have been reserved only for the space of from 10 to 15 years and were subject to the treatment of revenue waste lands before that.

30. Paragraph 79.—Although these forests will be treated for the supply of fuel altogether, still I consider it will be advisable to reserve all the babul producing areas as they exist at present (the area under babul does not exceed at the most 5 per cent. of the present total) for the growing of timber; that will mean for a period of 60 or 90 years. These areas will be in the nature

of plantations, existing as they do in small isolated patches, chiefly by the sides of canals and dhands, where they serve as excellent camping grounds—the only shade available in Sukkur forests. No lands need be abandoned if irrigational facilities are afforded from canals by the Public Works Department and this will have to come, if not soon, at some future date not far distant. The encouragement of babul growth is receiving attention.

31. Paragraph 80.—Clean felling is the best method of treatment. With irrigation, reproduction is extremely easy. Babul will not reproduce itself naturally in most parts as the natural seed is wanting and its growth will have to be, and is, artificially aided by broadcasting. Most coupes whether irrigated or not should be broadcasted with either *kandi* or babul. *Lai* does not reproduce from root suckers, though it is the ordinary method of reproduction for *bahan* in coupes.

32. Paragraph 81.—It would be advisable to my way of thinking to have an annual coupe in each working circle although occasionally a coupe might be blank. It will tend to regularise the yield of each circle in the future as each coupe is closed for regeneration after exploitation. The sequence of the coupes is not of much importance, but should be kept as regular as possible for convenience sake; and those coupes which are any way likely to be eroded should be exploited first in each circle. The choice of sequence of coupes is best left altogether to the Divisional Forest Officers subject to the supervision of the Deputy Conservator in charge.

33. Paragraph 82.—Mr. Robinson's plan is identical with that which he made for the Naushahro forests and which has been sanctioned by Government, with the exception that he here proposes a revolution of 30 years for the dry forests and 20 years for the riverside forests. In this I agree with him, substituting "irrigated forests" for "riverside forests." The difference in growth the two types of forest—dry and irrigated—is surprising and would be ticed even by the most casual observer. A girth of 10″ is quite large enough for firewood required for local consumption and no trees need be grown of a girth of more than 30″ with the exception of the babul mentioned above in appendix 29.

34. Paragraphs 83 and 84.—The fellings have been prescribed by Mr. Robinson for 10 years commencing from 1901-02, in all forests except those of Kot Sultan range (Kot Sultan, Mahrabpur, Milkiat Sarcar, Abad and Dilawarpur) and the forest of Ding. In pursuance of orders from me the Divisional Forest Officer, Sukkur, has prescribed fellings for the workable portions of these forests for the next 6 years. Mr. Robinson makes no mention of his reasons for omitting these areas from the plan. Some of the coupes prescribed by Mr. Robinson have also been eroded and others have had to be substituted in several of the river side forests. As stated above (paragraph 31), I am of opinion that each working circle should be perfect in itself, that is, there should be annual coupes in each, whether they yield anything or not. These coupes will, in the case of such working circles as are not interfered with by the river, be each of a certain more or less equal area. In circles that are liable to erosion, I propose that there should be a sliding scale, of areas based at the commencement of each period on the areas available, limited to a minimum of, say, 10 acres. When a forest has shrunk by erosion to an area of 200 acres the area can be tacked on to the nearest working circle, even if that working circle is one of full area, without much altering the size of the annual coupe. The more centres of cutting there are the more convenient it will be for the local population which, in the future, will be the chief source of demand. It would be sufficient to prescribe coupes for 5 year periods so as to make the plan still more elastic. All *kandi*, *lai* and *bahan* trees should be cut level with the ground and the stools trimmed so as to facilitate the coppicing. Babul does not coppice so it will be sufficient to cut flush with the ground. The coupes should be closed by hedging at the end of February to all grazing and browsing and kept closed for a minimum period of 5 years—where possible for more, up to 10. This will allow of two-thirds of the forest property being always open to grazing and browsing. On no account should any coupe be opened prior to the termination of the fifth year. All efforts should be concentrated upon theirrigation of the year's coupe and this irrigation should be kept up for at least 3 years after closure.

35. Paragraph 85.—Natural reproduction in *kandi* areas should always be supplemented by sowing either broadcast (in irrigated areas) or by sowing with the help of cereal crops in areas out of reach of flow water. I am having experiments made now of a method of sowing departmentally which seems to have had some success in the Madras Presidency, *i. e.*, sowing on raised mounds where the roots of the young plants are accessible through the loose earth to air and dew. It is everywhere noticeable in dry forests that the best growing *kandi* trees are always those standing on such mounds generally formed by the matted roots of grass-clumps. Babul areas should always be broadcasted. I am in agreement with Mr. Robinson in what he says as to taking the fullest advantage of the aid of cereal crops, and also as to the advisability of remitting assessment, wholly or in part on the same when the operations are successful from a forest point of view. There has been lately some exception taken by the Collector of Sukkur to this method of helping forest re-growth on the ground that cultivation of cereals should be altogether a matter for the Revenue Department. This I can hardly agree with for it is surely legitimate to grow forests on forest land by any method that is successful provided that method is legal. All sowings of this nature should be treated as plantations and should be carefully attended to and supervised. In cases where broadcasting is not successful the first year (the seedlings are sometimes damaged or killed by flood and frost), it should be repeated until a young crop is established.

36. Paragraph 86.—*Tali* plantations should be extended wherever possible. The seed should be sown either in nurseries or in baskets, and planted out not later than August when they will have become large enough by the winter to weather the frosts successfully. They should be watered well, but moderately for three years, and then occasionally during their lifetime. *Tali* requires water in the subsoil, though it does not do well in very wet ground. Its growth is extremely rapid and a tree of 40 years of age will fetch from Rs. 20 to Rs. 30.

37. Paragraph 87.—Range offices are required urgently and two have already been built. I do not agree at all with Mr. Robinson that present arrangements for housing the protective establishment are sufficient. The guards do not live in their forests and when they live in the neighbourhood the accommodation consists of a wretched hovel, reed-built and flimsy. I consider that the protective establishment should be properly housed since it undoubtedly would add to their morale, as it has been found to do in other places. Also, they should be obliged to live in their forests where it is possible. I say where possible, for one man will not live alone, nor would it be safe for him to do so in many places. There should be a guard's house in each forest of not more than 3 working circles, and it should be placed in a central position. It would cost about Rs. 600 and the houses required would be built gradually at the rate of one or two a year as funds permit.

38. Paragraph 88.—The railway contract having come to an end this year (1905) the demand for the produce of the forest will probably not equal the supply available as it will be restricted to that of the towns, mills, factories and Quetta. This local demand for the towns and mills has been steadily growing of late years and there is little fear of the requirements of the future reaching a smaller figure than the available supply—in fact it is morally certain that in the next 20 years the present area of forest will be found to be insufficient to satisfy the local demand in timber and fuel and grazing. With proper irrigation, the present yield should easily reach half as much again and it is probable it will double itself within the next 30 years.

39. As stated already above Mr. Robinson omitted to organise some of the forest areas and has given no reasons for so doing. These have been now included in the report and necessary additions have been made.

I have the honour to be,

Sir,

Your most obedient servant,

T. R. BELL,

Deputy Conservator of Forests,

Sind Circle.

Working Plans Report of the Forests of the Sukkur Division, Sind Circle.

INTRODUCTION.

This last working plan of the Sind forests has been unavoidably delayed in preparation and submission by the length of time that was taken up by the field work. The latter, though it lasted through three seasons, occupied only a part of each season, the two or three months at the end of each season having been given up to the marking off of areas for felling and to surveying the river frontages of forests in those other ranges of the division in which working plans operations were not actually in progress at the time. The size and shape of the riverain forests were so altered by the vagaries of the river since their original notification that they were in many instances quite unrecognisable; and the modifications which the forest areas underwent after the introduction of the revenue survey in 1885 were also not correctly recorded in the maps. It was, therefore necessary to survey and map out the areas organised each season before setting out the other details of the plan.

2. In the first season, 1900-01, the forests of Abad, Kashmor and Mirpur ranges, comprising an area of 114,513 acres 24 guntas, were taken in hand and completed; in the second season, 1901-02, the forests of Kot Sultan, Sukkur and Ghotki ranges, with an area of 80,940 acres 8 guntas were similarly organised; and, lastly, in the third season, 1902-03, the remaining area of 73,814 acres 4 guntas included in the Sadhuja and Rohri ranges, was brought under working plans control.

3. The cost of the field work, including the pay of the offic[illegible] office staff, amounts to Rs. 14,282-10-5 or Rs. 22-5-1 per square mi[illegible] the whole expenditure of the division for the three years, amo[illegible] Rs. 27,995-6-5, be considered, the cost per square mile will be Rs. 43[illegible]-11.